

# ANNOTATED CHECKLIST OF NEW MEXICAN CONVULVULACEAE

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## ABSTRACT

Specimens examined in 14 herbaria resulted in the identification of 25 species of Convolvulaceae for the state of New Mexico. The list includes three species not recorded in the recent state flora, and makes nomenclatural changes in five others to bring them in accord with current literature. A lectotype is chosen for *I. mexicana*.

## RESUMEN

Un revision de las muestras de catorce herbarios ha resultado en la identificación de veinticinco especies de Convolvulaceas para el estado de New Mexico. La lista incluye tres especies nuevamente reportados en el estado, y se realiza cambios de nomenclatura en cinco de las otras para ponerlas en acuerdo con la literatura moderna. Se selecciona un lectotipo para *Ipomoea mexicana*.

Although an updated flora of New Mexico was recently published (Martin and Hutchins 1981), there have been subsequent additions to the state (McDonald 1984; Spellenberg et al. 1986). More species are added as a result of studies of southwestern members of the family (Austin 1990b; in prep.). In addition, some of the names used by Martin and Hutchins (1981) are corrected.

In the following list, distribution data are provided for species on a county-by-county basis, and comments are made concerning the biogeographic relationships of each in the southwestern United States. Basically, the flora consists of species derived from three sources: the Great Plains, Mexico and Meso-America, and introduced weeds.

This list includes three species not included by Martin and Hutchins (1981), i.e., *Ipomoea dumetorum*, *I. plummerae* and *I. pubescens*, and changes five names used by the latter authors. Twenty-five species are now documented for the state. This number is similar to Arizona (30 species, Austin, unpubl.) but small compared with those found in Texas (58 species, Correll and Johnston 1970).

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## KEY TO GENERA

1. Leaf bases obtuse to acute.
  2. Styles 2; stigmas 2, globose; leaves elliptic to lanceolate or ovate-lanceolate; flowers salverform, 0.5–0.65 cm long ..... *Cressa*
  2. Styles 2; stigmas 4, linear to club-shaped; leaves ovate to almost linear; flowers rotate, funnellform or salverform, 5–22 mm long ..... *Evolvulus*
1. Leaf bases truncate, cordate to hastate.
  3. Leaves reniform; flowers mostly green, less than 1 cm wide ..... *Dichondra*
  3. Leaves variable, but not reniform; flowers white or colored other than green, mostly over 1 cm wide.
    4. Flowers white, with or without tinges of lavender to pink on limb.
      5. Calyx usually enclosed by 2 foliaceous bracts (not in *C. longipes*); corolla funnellform, 3–6 cm long; stigmas oblong, flattened .. *Calystegia*
      5. Calyx not enclosed, the bracts scalelike; corolla either campanulate, broadly funnellform, funnellform or salverform, (0.5-)1–3 cm long; stigmas subulate ..... *Convolvulus*
    4. Flowers lavender, blue, red or white with a purple to purple-red throat ..... *Ipomoea*

## KEY TO CALYSTEGIA

1. Leaf bases markedly 2-angled; calyx 15–30 mm long ..... *C. sepium* ssp. *angulata*
1. Leaf bases cordate to subsagittate, the lobes rounded; calyx 10–12 mm long ..... *C. macounii*

*CALYSTEGIA* R. BROWN HEDGE BINDWEED

1. *CALYSTEGIA MACOUNII* (Greene) Brummitt, Ann. Missouri Bot. Gard. 52: 215. 1965. — TYPE: CANADA. SASKATCHEWAN: Assiniboia, Milk River, Aug 1895, *Macounii* (not seen).

*Calystegia interior* House, Bull. Torrey Bot. Club 32: 140. 1905. — TYPE: COLORADO: ca. Fr. Collins, 19 Jun 1896, *Crandell* 1625 (NY!).

Apparently rare in New Mexico, this basically Great Plains species extends south into this state. Although the taxonomy of our native taxa is complex, the group has been discussed by Brummitt (1980).

Specimen examined. San Miguel Co.: Las Vegas, Soldier's Camp, 14 Jun 1927, *Bro. Arsene* 18720 (US).

2. *CALYSTEGIA SEPIUM* (L.) R. Br. ssp. *ANGULATA* Brummitt, Kew Bull. 35(2):328. 1980. — TYPE: IDAHO. CANYON CO.: *Macbride* 318 (NY!). *Calystegia sepium* (L.) R. Br. var. *angulata* (Brummitt) N. Holmgren in A. Cronquist et al., Intermountain Fl. Vasc. Pl. Intermountain West, U.S.A. 4:77. 1984.

This North American subspecies reaches its limits in the southwestern United States. Numerous people have misinterpreted this taxon, and the recent Utah flora (Welsh et al. 1987) records it under *Calystegia sepium* with the incorrect statement that it is an introduced European plant. These

plants are easily confused with the Great Plains taxon *C. sylvatica* spp. *fraterniflora* (Mackenzie & Bush) Brummitt, as was done by Tryon (1939), Correll and Correll (1972) and Lehr (1978).

Representative specimens examined. Colfax Co.: *Clarke* 16131 (UNM). Dona Ana Co.: 19 Jul 1902, *Metcalf* s.n. (ARIZ, NMC); *Wooton & Standley* 3353 (ARIZ, NMC). Rio Arriba Co.: Jul 1859, *Newberry* s.n. (US). San Juan Co.: *Standley* 7031 (US). San Miguel Co.: Jul 1881, *Vasey* s.n. (NY).

#### KEY TO *CONVOLVULUS*

1. Leaves almost as broad as long; calyx 3–5 mm long; perennials from deep creeping root, forming large patches . . . . . *C. arvensis*
1. Leaves usually much longer than broad; calyx 6–12 mm long; perennials from taproot, sometimes divided at apex but not forming large, creeping patches . . . . . *C. equitans*

#### *CONVOLVULUS* L. BINDWEED

3. *CONVOLVULUS ARVENSIS* L., Sp. Pl. 153. 1753. — TYPE: SWEDEN: specimen 218.1 (LINN, microfiche!).

This European introduction has become one of the most widely distributed members of the family in North America. It is a problem weed in cotton and corn fields.

Representative specimens examined. Bernalillo Co.: 16 Jul 1945, *Reed* s.n. (UNM). Catron Co.: in 1964, *James* s.n. (UNM). Chaves Co.: *Bohrer* 1975 (ARIZ). Colfax Co.: 13 Jun 1979, *Higgins and Campbell* s.n. (UNM). Curry Co.: 1 Oct 1907, *Liebert* s.n. (NMC). Dona Ana Co.: *Anderson* 13 (NMC). Eddy Co.: 18 May 1940, *Hershey* s.n. (NMC). Grant Co.: *Hess* 2065 (ARIZ). Guadalupe Co.: *Tscharkowsky* 146 (ARIZ). Hidalgo Co.: *Castetter* 10691 (UNM). Lea Co.: *Pearce* 2675 (ARIZ). Lincoln Co.: *Hutchins* 3505 (UNM). McKinley Co.: *Nelson* 7341 (UNM). Otero Co.: 24 May 1970, *Tudien* s.n. (NMC). Quay Co.: *Waldrop* 37 (UNM). Rio Arriba Co.: *Baker* 530 (ARIZ). Roosevelt Co.: *Castetter* 10720 (UNM). San Juan Co.: *Levin* 408 (ARIZ). San Miguel Co.: 20 Jul 1965, *Brueske* s.n. (UNM). Sandoval Co.: *Nelson* 7342 (UNM). Santa Fe Co.: *Bartlett* 63 (NMC). Sierra Co.: *Metcalf* 1186 (NMC, NY, UC). Socorro Co.: *Moeller* 277 (NMC). Taos Co.: *Castetter* 10689 (UNM). Torrance Co.: *Bedker* 1042 (UNM). Valencia Co.: *Riffle* 1216 (UNM).

4. *CONVOLVULUS EQUITANS* Bentham, Pl. Hartweg. 16. 1839. — TYPE: MEXICO: *Hartweg* 98 (K? not seen).

*Convolvulus incanus* sensu auct., non Vahl.

This tropical American species reaches its northern limit in Arizona, Utah, New Mexico and Texas.

Representative specimens examined: Catron Co.: *Mulford* 516 (NY). Chaves Co.: *Earle & Earle* 248 (NMC, NY, UC). Colfax Co.: *Griffiths* 5537 (US). De Baca Co.: *Dunn* 1955 (UNM). Dona Ana Co.: 18 May 1936, *Hershey* s.n. (NMC). Eddy Co.: 3 Aug 1909, *Wooton* s.n. (NMC). Grant Co.: 22 Jun 1906, *Wooton* s.n. (NMC). Guadalupe Co.: *Clark* 7344 (UNM). Harding Co.: *Ward et al.* 81-244 (NMC). Hidalgo Co.: *Cazier* 405 (ASU). Spellenberg & Spellenberg 3825 (ASU, TEX, NMC, NY). Lincoln Co.: *Locke et al.* G11-40

(ASU). Luna Co.: *Hershey* 2043 (NMC). Otero Co.: *Fletcher and Haggren* 600 (UNM). Quay Co.: *Castetter* 10690 (UNM). San Miguel Co.: 1899, *Cockerell & Porter s.n.* (NMC). Sandoval Co.: *Plowman and Kilham* AP295 (GH). Sierra Co.: *Spellenberg & Tolsen* 2539 (NMC, NY). Socorro Co.: *Fleetwood* 10 (NMC). Union Co.: 23 Sep 1907, *Hanson s.n.* (NMC).

Ward (1984) recorded the chromosome numbers of this species, based on his Harding County collection, as  $n = 12$ .

#### CRESSA ALKALI WEED

5. *CRESSA TRUXILLENSIS* Humboldt, Bonpland and Kunth, Nov. Gen. Sp. Pl. 3:93. 1819. — TYPE: PERU: Trujillo, *Humboldt & Bonpland* 3727 (MICROFICHE: B!; ISOTYPE: F!). *Cressa cretica* L. var. *truxillensis* (H.B. & K.) Choisy in DeCandolle, Prodr. 9:440. 1845.  
*Cressa depressa* Goodding, Bot. Gaz. 37:58. 1904. — TYPE: NEVADA: *Goodding* 726 (UC!).  
*Cressa insularis* House, Bull. Torrey Bot. Club 33:315. 1906. — TYPE: MEXICO: Revillagigedo Isls, *Barkley* 252 (US!, UC!).  
*Cressa erecta* Rydberg, Bull. Torrey Bot. Club 40:466. 1913. — TYPE: UTAH: *Garrett* 870 (NY!).  
*Cressa minima* Heller, Muhlenbergia 8:140. 1913. — TYPE: NEVADA: *Heller and Kennedy* 8663a (NY!). *Cressa truxillensis* H.B. & K. var. *minima* (Heller) Munz, Aliso 1:96. 1958.  
*Cressa pumila* Heller, Muhlenbergia 8:142. tab. 17. 1913. nomen nudum.  
*Cressa vallicola* Heller, Muhlenbergia 8: 140. tab. 17. 1913. — TYPE: CALIFORNIA: *Heller* 8936a UC!).  
*Cressa truxillensis* H.B. & K. var. *vallicola* (Heller) Munz, Aliso 1:96. 1958.

Throughout the North American range of this species (e and s California and se Oregon, e to Utah, w parts of Texas and Oklahoma) there is considerable variation that appears to be of minor taxonomic importance (cf. Austin 1990b). No New Mexican populations are thought to be worthy of a varietal name at this time. For example, plants which are erect have been typically referred to *C. truxillensis*; those which are prostrate are referred to *C. depressa* Goodding. Both of these growth forms have been found growing in the same stand (Arizona: Yuma Co.: *Austin and Austin* 7586 ASU). Although the plants are locally common in coastal Sonora, they are infrequent to rare in Arizona, New Mexico and Texas.

Representative specimens studied: Bernalillo Co.: *Dittmer and Clark* 7361 (UNM). Chaves Co.: *Waterfall* 4313 (ARIZ). Dona Ana Co.: 12 Jun 1892, *Wootton s.n.* (NMC). Eddy Co.: *Castetter* 10683 (UNM). Otero Co.: 16 May 1936, *Hershey s.n.* (NMC). Socorro Co.: *Castetter s.n.* (UNM 10619).

#### KEY TO DICHONDRA

1. Plants with appressed, whitish or canescent pubescence; pedicels 4–6 mm long, recurved near their attachment to the stolon . . . . . *D. argentea*

1. Plants not whitish or canescent; pedicels 5–13(-26) mm long, recurved near the calyx ..... *D. brachypoda*

*DICHONDRA* Forster PENNYWORT

6. *DICHONDRA ARGENTEA* Willd., Hort. Berol. 297. t. 81.1806. — TYPE: COLOMBIA: Tolima near Honda, *Boupland* (B?).

These plants often grow on southwestern-facing rocky ridges in Dona Ana and Luna Counties. Although plants may be locally common, the species is infrequent in the state. The species occurs in New Mexico, Texas, and was found once in Arizona in 1931 (*Harrison* 8256 ARIZ). In Mexico it occurs from Chihuahua south to Chiapas; also found in Central and South America.

Representative specimens studied: De Baca Co.: 23 Oct 1904, *Wootton s.n.* (NMC); 25 Jun 1894, *Wootton s.n.* (NMC). Dona Ana Co.: *Austin & Austin* 7637 (ASU). Grant Co.: *Knight* 2725 (UNM). Harding Co.: *Wootton s.n.* (UNM 18050). Luna Co.: *Goodding* 3189 (NMC).

7. *DICHONDRA BRACHYPODA* Wootton and Standley, Contr. U.S. Nat. Herb. 16:160. 1913. — TYPE: NEW MEXICO. DONA ANA CO.: Organ Mountains, Filmore Canyon, 23 Sep 1906, *Wootton & Standley s.n.* (US!).

This species of the Mexican-U.S. border is known from Arizona, New Mexico and Texas. In Mexico it has been found from Chihuahua to Oaxaca.

Representative specimens studied: De Baca Co.: 1890, *Wootton s.n.* (US). Eddy Co.: 31 Jul 1909, *Wootton s.n.* (NMC). Grant Co.: *Barneby* 2541 (NY). Hidalgo Co.: *Spellenberg & Repass* 5318 (NMC, NY); *Spellenberg & Spellenberg* 6318 (NMC, NY). Sierra Co.: *Metcalfe* 1377 (GH, NMC, NY, UC).

KEY TO *EVOLVULUS*

1. Peduncle developed, longer or shorter than the subtending leaves.
  2. Sepals densely pilose, 2–2.5 mm long; corolla (5-) 7–10 mm wide; leaves elliptic, ovate or oblong to lanceolate; stems with appressed-pilose and long spreading trichomes ..... *E. alsinoides*
  2. Sepals pilose to tomentose, 3–3.5 mm long; corolla (10-)12–22 mm wide; leaves lanceolate to linear-lanceolate; stems appressed pilose to tomentose, rarely with spreading trichomes ..... *E. laetus*
1. Peduncle absent or extremely short, always shorter than subtending leaves.
  3. Sepals lanceolate to narrow-lanceolate, 4–5 mm long, spreading pilose ..... *E. nuttallianus*
  3. Sepals oblong-lanceolate, 3–5 mm long, appressed-pilose ..... *E. sericeus*

*EVOLVULUS* L.

8. *EVOLVULUS ALSINOIDES* L. var. *ANGUSTIFOLIA* Torr., Bot. Mex. Bound. 150. 1858. — TYPE: TEXAS. BREWSTER CO.: near the Grand Canyon of the Rio Grande, August, *Parry* (not found in CM, GH, ISC, MO, NY, PH, US or YU).

*Evolvulus alsinoides* L. var. *acapulcensis* (Willd.) van Ooststroom, Meded. Bot. Mus. Herb. Rijks Univ. Utrecht 14:34. 1934. — TYPE: MEXICO. GUERRERO: near Acapulco, *Willdenow* 6128 (B).

This species is pantropical, and has been divided into a large number of varieties. The variety that occurs in Arizona, New Mexico, Texas and Mexico is var. *angustifolia* Torrey (cf. Austin 1990a). Nearby in Texas is the var. *hirticaulis* Torrey. While this Sonoran Desert variety seems to be rare in New Mexico, it is frequent in southern Arizona.

Representative specimens studied: Dona Ana Co.: *Todsen* 700802-3 (NMC). Hidalgo Co.: *Castetter s.n.* (UNM 16459). Luna Co.: *Barneby* 2485 (NY).

9. *EVOLVULUS LAETUS* Gray, Proc. Amer. Acad. Arts 17:228. 1882. — TYPE: ARIZONA: 1881, *Pringle* (F!, GH!, US!). *Evolvulus arizonicus* Gray var. *laetus* (Gray) van Ooststroom, Meded. Bot. Mus. Herb. Rijks Univ. Utrecht 14:76. 1934.

*Evolvulus arizonicus* Gray, Syn. Fl. N. Amer. 2, 1:218. 1886. — TYPE: MEXICO. SONORA: sandy prairies, Sep 1857, *Thurber* 1023 (GH!); see Austin (1990a) on complexities of typification.

Martin & Hutchins (1981: 1557) separated these two named varieties on the basis of stem and leaf pubescence: short and appressed in var. *arizonicus*, and both short-appressed and long and spreading in var. *laetus*. These traits do not allow separation of the named taxa across the geographic range of the species (cf. Austin 1990a).

Representative specimens studied: Dona Ana Co.: 19 Jul 1901, *Wootton s.n.* (NMC). Grant Co.: *Moore* 103 (ARIZ). Hidalgo Co.: *Spellenberg & Repass* 5387 (NMC).

10. *EVOLVULUS NUTTALLIANUS* Roem. and Schult., Syst. Veg. 6:198. 1820. — TYPE: not seen.

*Evolvulus pilosus* Nutt., Gen. N. Amer. Pl. 1:174. 1818, nom. illegit. — TYPE: on the banks of the Missouri, *Nuttall* (not found).

*Evolvulus oreophilus* Greene, Leaflet Bot. Observ. and Crit. 1:151. 1903–1906. — TYPE: NEW MEXICO. SIERRA Co.: *Metcalf* 1228 (NMC!, NY!, UC!, US!).

Perry (1939) originally pointed out that the Roemer & Schultes name has priority over the Nuttall name. This is a Great Plains species that reaches its limits in the southwestern United States.

Representative specimens studied: Chaves Co.: *Higgins* 9155 (NY). Colfax Co.: *Standley* 6291 (US). Dona Ana Co.: *Wootton* 128 (NMC, UC). Eddy Co.: 1 Aug 1909, *Wootton s.n.* (NMC). Grant Co.: *Metcalf s.n.* (UNM 18728). Guadalupe Co.: *Tschakowsky* 333 (ARIZ). Harding Co.: *Spellenberg et al.* 6041 (NMC, NY). Hidalgo Co.: *Moeller & Anderson* 451 (NMC). Lea Co.: *Marley et al.* 1458 (UNM). Lincoln Co.: *Gordon and Dunn* 882 (UNM). Luna Co.: *Worthington* 13709 (NY). Otero Co.: *Fletcher and Haggren* 644 (UNM). Quay Co.: collector unknown 7358 (UNM); *Eggleston* 20121 (GH). Roosevelt

Co.: 17 Aug 1909, *Wootton s.n.* (NMC). San Juan Co.: *Lozore 350* (ARIZ). San Miguel Co.: *Brooke M06* (UNM). Sandoval Co.: *Castetter 7364* (UNM). Santa Fe Co.: *McKinley 84* (UNM). Sierra Co.: *Tadsen 55267* (NMC). Socorro Co.: *Herrick 711* (NMC). Union Co.: *Bartlett 234* (NMC).

Some specimens of this species and *E. sericeus* are difficult to separate. Sepal pubescence and shape will usually allow their separation.

11. *EVOLVULUS SERICEUS* Swartz, Prodr. Veg. Ind. Occ. 55. 1788. —  
Type: JAMAICA: Swartz (M, S).

*Evolvulus wilcoxiana* House, Bull. Torrey Bot. Club 33:315. 1906. — Type: ARIZONA: Wilcox 96 (US!).

*Evolvulus sericeus* var. *discolor* (Benth.) Gray, Syn. Fl. N. Amer. 2, 1: 436. 1886. — Type: MEXICO: between Lagos (Jalisco) and Aguascalientes (Aguascalientes), Hartweg 20 (K, L, P).

Martin & Hutchins (1981: 1557) separate these two taxa on the single basis of leaf pubescence: upper surface pubescent in var. *sericeus*; upper leaf surface glabrate and green in var. *discolor*. Both forms may be found within the same population of the plants, thus only one taxon seems worthy of recognition. (cf. Austin 1982). This is a tropical American species that reaches its northern limits in the United States, in Arizona, New Mexico, Texas, Georgia and also Florida.

Representative specimens studied: Catron Co.: *Shelton 115* (NY). Curry Co.: *Clark s.n.* (UNM 5990). Dona Ana Co.: 29 Aug 1894, *Wootton s.n.* (NMC). Eddy Co.: *Marley s.n.* (GH, UNM 74839). Grant Co.: *Metcalfe 100* (GH, NMC, NY, UC). Hidalgo Co.: *Moir 109* (NMC). Luna Co.: *Castetter 10692* (UNM). Otero Co.: *Meents & Moir 20* (NMC). Roosevelt Co.: *Castetter 10693* (UNM). San Miguel Co.: *Cockerell s.n.* in 1899 (NMC). Sierra Co.: *Metcalfe 1259* (NMC, NY). Socorro Co.: *Higgins 7719* (NMC).

KEY TO *IPOMOEA*

1. Leaves pedatisect, less often sagittate.
  2. Flowers salverform, 3.5–10 cm long, nocturnal or diurnal. . . . . *I. tenuiloba*
  2. Flowers funnelliform, mostly less than 3 cm long, diurnal.
    3. Sepals hirsute; corolla 2.5–3 cm long . . . . . *I. leptotoma*
    3. Sepals glabrous or muricate; corolla 1–3 cm long.
      4. Calyx glabrous; corolla 1–1.5 cm long. . . . . *I. costellata*
      4. Calyx muricate-tuberculate; corolla 2–3 cm long.
        5. Sepals 5–6 mm long; peduncle plus pedicel about 5–10 (–14) mm long; tuber elongate . . . . . *I. capillacea*
        5. Sepals 7–9 mm long; peduncles plus pedicels about 14–18 (–22) mm long; tuber globose to subglobose . . . . . *I. plummerae*
  1. Leaves simple to lobed or toothed, often cordate.
    6. Erect herbs . . . . . *I. leptophylla*
    6. Climbing to trailing vines.
      7. Corollas 2–2.6 cm long, scarlet, orange or yellow . . . . . *I. cristulata*
      7. Corollas 4–15 cm long, lavender to white or purple.

8. Pedicels and peduncles glabrous or with appressed small trichomes.
  9. Sepals triangular ..... *I. cardiophylla*
  9. Sepals ovate ..... *I. dumetorum*
8. Pedicels and peduncles with spreading, ascending or reflexed trichomes.
  10. Sepal apices acute to obtuse.
    11. Sepals 8–15 mm long, ovate-lanceolate to elliptic and rounded at the base; corolla 2.5–4.3 (-5.0) cm long .. *I. purpurea*
    11. Sepals 15–28 mm long, ovate-attenuate to lanceolate-attenuate and truncate at the base; corolla 4–8 cm long ..... *I. pubescens*
  10. Sepal apices acuminate to long-acuminate.
    12. Sepals 9–12 mm long, linear-attenuate and not conspicuously dilated at the base; corolla 1.6–2.5 cm long ..... *I. barbatisepala*
    12. Sepals 12–28 mm long, lanceolate to ovate-lanceolate, conspicuously dilated at the base; corolla 2–10 cm long.
      13. Sepals 12–24 mm long, lanceolate; corolla 2.0–3.7 (-4.5) cm long; annual ..... *I. hederacea*
      13. Sepals 15–28 mm long, ovate-lanceolate to narrowly lanceolate; corolla 6–10 cm long; perennial .... *I. lindheimeri*

#### IPOMOEA L. MORNING GLORY

12. IPOMOEA BARBATISEPALA Gray, Syn. Fl. N. Amer. 2, 1:212. 1886. — TYPE: TEXAS: *Wright 507* (GH!, US!).

Some specimens are difficult to separate from the closely allied *I. hederacea* Jacq. The latter species, however, was originally endemic to the southeastern U.S., while *I. barbatisepala* is a Mexican species on the margin of its range in Arizona, New Mexico and Texas.

Representative specimen studied: Eddy Co.: *Clark s.n.* (UNM 4877). Luna Co.: *Tudsen 164* (NMC).

13. IPOMOEA CAPILLACEA (H.B. & K.) G. Don, Gen. Syst. 4:267. 1838. — TYPE: COLOMBIA: *Bonpland* (microfiche!).

*Ipomoea muricata* Cav., Icones Pl. 5:52. pl. 478. f. 2. 1794, non L. (1763), non Jacq. (1789).

This is an American species ranging from Arizona and New Mexico through Mexico and Central America to South America.

Representative specimens studied: Catron Co.: *Fletcher 820* (UNM). Grant Co.: *Rusby 301* (NY). Lincoln Co.: *Earle & Earle 492* (NY). Sierra Co.: *Knight 2199* (UNM).

14. IPOMOEA CARDIOPHYLLA Gray, Syn. Fl. N. Amer. 2, 1:213. 1886. — TYPE: TEXAS: *Wright 1314* (GH!).



The type was collected in Texas (Hudspeth Co., Hueco Mts., E of El Paso. 13 Oct 1849) where it was rediscovered by McDonald (1982). This species was most recently relocated by Ms. Karie Skaggs, naturalist on the A. B. Cox Nature Conservancy land in the Organ Mountains near Las Cruces. The species is easily confused with *I. parasitica* (H.B.K.) G. Don and *I. tricolor* Cav. of Mexico, Meso-America and South America.

Representative specimens studied: Dona Ana Co.: 28 Sep 1902, *Wootton s.n.* (NMC); 28 Sep 1980, *Worthington* 6655 (TEX), 11 Oct 1980, 6746 (TEX); 23 Oct 1975, *Von Lob* 687 (UNM). Grant Co.: *Zimmerman and Zimmerman* 2006 (SNM fide McDonald 1982: 261).

15. *IPOMOEA COSTELLATA* Torr., Bot. Mex. Bound. 149. 1859. — TYPE: TEXAS: *Wright* 505 (GH!, US!).

*Ipomoea futilis* A. Nelson, Univ. Wyoming Publ. Sci. 1(3):65. 1924. — TYPE: ARIZONA: *Hanson* 1016 (RS).

This annual desert species is similar to and undoubtedly related to *I. leptotoma*. It occurs in Arizona, New Mexico and Mexico (Baja California, Chihuahua, and Sonora, south to Chiapas and Veracruz).

Representative specimens studied: Bernalillo Co.: *Wagner* 515 (UNM). Catron Co.: *Hutchins* 9151 (UNM). Chaves Co.: *Earle & Earle* 331 (NMC, NY). Dona Ana Co.: 28 Sep 1902, *Wootton s.n.* (ARIZ., NMC). Grant Co.: *Spellenberg et al.* 8270 (NMC, NY, TEX). Hidalgo Co.: *Spellenberg & Spellenberg* 3852 (NMC, NY, TEX). Lincoln Co.: *Hutchins* 2590 (UNM). Luna Co.: *Worthington* 13742 (NY). San Miguel Co.: *Hill* 12258 (GH). Socorro Co.: *Metcalfe* 766 (ARIZ., NMC).

16. *IPOMOEA CRISTULATA* H. Hall., Med. Rijksherb. Leiden 46:20. 1922. — TYPE: MEXICO: based on syntypes including *Bourgeau* 1061 (G-DC!). A nom. nov. for *Quamoclit gracilis* H. Hall, Bull. Herb. Boiss. 7:416. 1899.

*Ipomoea coccinea* auct., non L.

Martin & Hutchins (1981: 1560), Wooten & Standley (1915), Tidestrom & Kittell (1942), Kearney & Peebles (1951) and Shreve & Wiggins (1964) have applied two incorrect names to these populations: *I. coccinea* var. *coccinea* and *I. coccinea* var. *bederifolia*. In fact, these populations represent *Ipomoea cristulata*, a largely Mexican (Baja California, Chihuahua, and Sonora south to Michoacan and San Luis Potosi) xerophyte that extends northward into Arizona, New Mexico, Texas and into the Great Plains. *Ipomoea cristulata* is easily distinguished from the other two taxa, which are best considered species, by its sepals which are 3–4 mm long, and (when in fruit) by reflexed peduncles. The other two species have smaller sepals and erect fruits. *Ipomoea coccinea* L. is a southeastern United States endemic; *I. bederifolia* is a tropical American species now widely spread and naturalized in the wet tropics of the world.

Ward (1984) reported the Hidalgo County collection with a chromosome number of  $n = 15$ .

Representative specimens studied: Catron Co.: *Hutchins* 9843 (UNM). Dona Ana Co.: 16 Aug 1895, *Wootton s.n.* (NMC). Grant Co.: *Beckworth* 150 (DES). Hidalgo Co.: *Spellenberg* 3834 (NMC). Lincoln Co.: 16 Aug 1899, *Turner s.n.* (NMC). Rio Arriba Co.: *Castetter* 10686 (UNM). San Miguel Co.: *Standley* 5272 (NMC). Sandoval Co.: *Yarnell* 128 (UNM). Santa Fe Co.: *Bartlett* 65 (NMC). Sierra Co.: 27 Jul 1904, *Metcalf s.n.* (NMC). Socorro Co.: *Metcalf* 825 (NMC). Torrance Co.: *Fletcher* 5612 (UNM). Valencia Co.: *McCallum* 619 (UNM).

17. *IPOMOEA DUMETORUM* Willd. ex Roem. & Schult., Syst. Veg. 4:789. 1819. — TYPE: COLOMBIA OR ECUADOR: without locality (B).

Martin & Hutchins (1981) do not include this in their flora. This Mexican, Meso-American and South American species was identified and relocated by McDonald (1982, 1984) in New Mexico and Texas.

McDonald (1984) cites specimens in addition to those listed here.

Dona Ana Co.: Organ Mts., *McDonald* 140 TEX., not seen). Lincoln Co.: White Mountains, alt. 7400 ft, 25 Aug 1907, *Wootton & Standley s.n.* (NMC, US); White Mts., alt. 2500 m., *Wootton* 630 (MO, not seen).

Because the species has been so rarely collected in the U.S.A., additional specimens will be cited. TEXAS. Jeff Davis Co.: Mt. Livermore, alt. 2700 m., *Warnock* 23068 (SR, not seen); Davis Mts., Madera Canyon, near Livermore, *Hinckley s.n.* (ARIZ).

18. *IPOMOEA HEDERACEA* Jacq., Collect. Bot. 1:124. 1786. — TYPE: Based on Dillenius, Hort. Elth. t. 80, fig. 92 (plate selected as lectotype by Verdcourt, 1957).

*Ipomoea desertorum* House, Ann. N.Y. Acad. Sci. 18:203. 1908. — TYPE: ARIZONA: *Thornber* 29 (ARIZ!, NY!).

*Ipomoea birsutula* authors, pro parte, non Jacq. f. (1811).

Martin & Hutchins (1981: 1560) separate both their *I. hederacea* and *I. birsutula* from *I. purpurea* on the basis of leaf lobing. If the plants have entire leaves they are placed in *I. purpurea*. If there are leaf lobes, they key to either of the other two species. Leaf lobing will not separate these plants under any circumstances (Elmore 1986); only characteristics of the sepals will separate them. The correct citation is *I. hederacea* Jacq. because Jacquin proposed the name as a new species, not a transfer of a Linnaean name (cf. Austin 1986a). While the species is a common weed in cotton fields in Arizona, it may be rare in New Mexico. At least, it is seldom collected since I found only two collections.

Specimens studied: Hidalgo Co.: 20 Aug 1955, *Castetter* 11350 (UNM). Luna Co.: 30 Aug 1895, *Mulford* 1088 (NY).

19. *IPOMOEA LEPTOPHYLLA* Torrey in Fremont, First Rept. 94. 1845. — TYPE: forks of the upper Platte to Laramie River, *Fremont* (HOLOTYPE: US!; PROBABLE ISOTYPE: NY!).

I consider this Great Plains species an indicator of where prairies formerly existed in New Mexico. It reaches its southwestern limit in New Mexico.

Representative specimens studied: Chaves Co.: *Wagner and Manthey* 979 (UNM). Colfax Co.: *Griffiths* 2323 (US). Curry Co.: 18 Aug 1909, *Wooton s.n.* (NMC). De Baca Co.: *Higgins* 8659 (NY). Dona Ana Co.: *Castetter* 7375 (UNM). Eddy Co.: *Spellenberg & Repass* 5255 (NMC). Harding Co.: *Van Devender* 84-377 (ARIZ). Hidalgo Co.: *herb. Chapman s.n.* (NY). Quay Co.: 29 Jul 1942, *Suggs s.n.* (NMC). Rio Arriba Co.: *Perdue* 6128 (US). Roosevelt Co.: *Secor* 61 (TEX). San Miguel Co.: *Crutchfield* 417 (TEX). Sandoval Co.: 2 Sep 1936, *Hershey s.n.* (NMC). Santa Fe Co.: *Hitchcock et al.* 4188 (UC). Torrance Co.: *Castetter* 7372 (UNM). Union Co.: *Bartlett* 250 (NMC).

20. *IPOMOEA LEPTOTOMA* Torr., Bot. Mex. Bound. 150. 1859. — TYPE: MEXICO. SONORA: *Thurber* 977 (GH!).

*Ipomoea leptotoma* var. *wootonii* Kelso, *Rhodora* 39:151. 1937. — TYPE: ARIZONA: 10 Sep 1914, *Wooton s.n.* (US!).

This northern Mexican species is frequent in parts of Arizona, but apparently rare in New Mexico.

Specimens studied: Curry Co.: *Whitehouse s.n.* (TEX). Hidalgo Co.: *Castetter* 9509 (UNM).

21. *IPOMOEA LINDHEIMERI* Gray, Syn. Fl. N. Amer. 2, 1:210. 1886. — TYPE: TEXAS: *Wright* 508 (GH!, US!).

This Mexican-U.S. border species is known from Texas, New Mexico and Arizona as well as Coahuila and Chihuahua in Mexico.

Representative specimens studied: Dona Ana Co.: 19 Sep 1976, *Todsen s.n.* (NMC). Eddy Co.: 4 Aug 1905, *Wooton s.n.* (NMC); *Starr & Starr* 81 (ARIZ). Otero Co.: *Gordon and Norris* 552 (UNM). County Unknown: *Wright* 1612 (NY).

22. *IPOMOEA PLUMMERAE* Gray, Syn. Fl. N. Amer. 2, 1: suppl. 434. 1886. — TYPE: ARIZONA: *Lemmon* 2839 (GH!).

*Ipomoea cuneifolia* Gray, Proc. Amer. Acad. Arts 19:90. 1883, non Meisner (1869). — TYPE: ARIZONA: *Lemmon* 2839 (F!, GH!, US!). *Ipomoea egregia* House, *Torreya* 6:124. 1906, nom. nov. for *I. cuneifolia* Gray.

The species was not recorded for the state by Wooton and Standley (1915), nor Martin & Hutchins (1981), although it was included with a query in Tidestrom and Kittell (1941). This is a Mexican (Coahuila, Chihuahua, Sonora) species reaching its northern limits in Arizona and New Mexico.

Representative specimens studied: Catron Co.: *Fletcher* 2762 (UNM). Grant Co.: *Spellenberg et al.* 5864 (NMC). Lincoln Co.: 5 Aug 1897, *Wootton s.n.* (NMC); *Wootton* 627 (NY). Otero Co.: 8 Aug 1899, *Wootton s.n.* (NMC). San Miguel Co.: in 1899, *Cockerell & Porter s.n.* (NMC). Sierra Co.: 24 Aug 1969, *Todsen s.n.* (NMC). Socorro Co.: *Metcalf* 271 (GH, NMC).

23. *IPOMOEA PUBESCENS* Lam., *Encycl. Meth. Bot.* 1:265. 1791. —  
Type: America, collector unknown (K!).

*Ipomoea heterophylla* Ortega, *Hort. Matr. Dec.* 1:9. 1800. — Type: MEXICO: not seen.  
*Ipomoea lindheimeri* Gray var. *subintegra* House, *Ann. N.Y. Acad. Sci.* 18:196.  
1908. — Type: ARIZONA: *Lemmon* 2835 (GH!, UC!).

This species was not included by Martin and Hutchins (1981) although they had specimens of it misidentified as *I. lindheimeri* in the UNM herbarium. This is a widespread American species that reaches its northern limit in the southwestern United States.

Representative specimens studied: Dona Ana Co.: *Knight* 3415 (UNM). Eddy Co.: *Bailey* 721 (US). Hidalgo Co.: collector unknown 7367 (UNM). Luna Co.: *Spellenberg & Spellenberg* 6626 (NMC).

24. *IPOMOEA PURPUREA* (L.) Roth, *Bot. Abh.* 27. 1787. — Type: U.S.A.  
Dillenius, *Hort. Elth.* t. 84, fig. 97. 1732 (LECTOTYPE: chosen by Verdcourt 1963).

*Ipomoea hirsutula* Jacquin f., *Eclog. Pl. Rar.* 1:63. t. 44. 1811. — Type: no specimen found, (LECTOTYPE: the plate chosen by Austin 1990).

*Ipomoea mexicana* Gray, *Syn. Fl. N. Amer.* 2(1): 210. 1886. — Type: NEW MEXICO AND ARIZONA. Based on syntypes. Since no lectotype has been chosen (House 1908), the following is here designated.

"N. Mex. 1851-52." *C. Wright* 1612 (LECTOTYPE: GH!); on same sheet is: Arizona, Cochise Co.: Ft. Huachuca, 1882. *Lemmon* 2838 (GH!). Since both collections were probably on the sheet when Gray published the binomial, he surely examined both. He cited, however, only the collection by Wright; thus, it is chosen as lectotype.

Gray also cited a collection by Fendler which is in the GH as a sheet containing two collections: New Mexico, *Plantae Nova-Mexicanae*, 1847. *Fendler* 662 (GH!); Arizona, w/o loc. 1878, *Dr. Loud* 152-A (GH!). Gray also cited a collection by Thurber which has not been located in GH.

The key in Martin & Hutchins will cause the user to place the entire-leaved specimens of *I. purpurea* here and the lobed-leaved specimens into *I. hirsutula*; here they are treated synonymously. This species is now pantropical because of cultivation, but it was undoubtedly originally Mexican. It occurs in Arizona, New Mexico, and Texas and has been introduced and/or escaped in the Great Plains, the southeastern United States and the northeastern United States.

Representative specimens studied: Bernalillo Co.: *Wagner* 519 (UNM). Catron Co.: *Hutchins* 9121 (UNM). Chaves Co.: *Earle* 256 (TEX, NY). Dona Ana Co.: *Worthington*

6635 (TEX). Eddy Co.: Higgins 9233 (NY). Grant Co.: Barkley 14710 (TEX). Guadalupe Co.: Tschakowsky 387 (ARIZ). Harding Co.: Fletcher and Martin 5768 (UNM). Hidalgo Co.: Spellenberg & Spellenberg 3905 (ASU, NMC, NY). Lincoln Co.: Wootton & Standley 3631 (NMC). Luna Co.: Spellenberg & Spellenberg 6227 (NMC, NY). Otero Co.: Ward & Soreng 81-534 (NMC). San Miguel Co.: Standley 4946 (NMC, NY). Sandoval Co.: Dixon 4-348 (UNM). Santa Fe Co.: Bartlett 64 (NMC). Socorro Co.: 19 Aug 1900, Wootton s.n. (NMC). Torrance Co.: Bedkey 1542 (UNM).

25. *IPOMOEA TENUILOBA* Torr., Bot. Mex. Bound. 148. 1859. — TYPE: TEXAS: Bigelow (US!).

*Ipomoea lemmonii* Gray, Proc. Amer. Acad. Sci. 19:20. 1883. — TYPE: ARIZONA: Lemmon 2840 (GH!, US!). *Ipomoea tenuiloba* Torrey var. *lemmonii* (Gray) Yatskievych & Mason, Madrono 31:102. 1984.

Since both varieties and intermediates occur in New Mexico, and they have been completely discussed by Yatskievych & Mason (1984), they will not be discussed in detail here.

Representative specimens studied: Eddy Co.: 2 Aug 1909, Wootton s.n. (NMC). Grant Co.: Wagner 3444 (UNM). Hidalgo Co.: 15 Sep 1980, Tolsen s.n. (NMC).

#### EXCLUDED SPECIES

*Ipomoea longifolia* Benth.

The range given by Martin & Hutchins (1981: 1562) includes the range of *I. shumardiana* (Torrey) Shinnery, a Great Plains species that is distinct. There is one specimen of *I. leptophylla* (Wimhoff 508 ASU) misidentified as *I. longifolia*. *Ipomoea longifolia* has not been verified for any part of the United States except southeastern Arizona (cf. Austin 1986b).

*Calystegia pubescens* Lindl.

The species has been collected once (Santa Fe Co.: 10 Jun 1925, Bro. Benedict 128 US) from a garden. It was undoubtedly cultivated as the species is cultivated farther north in the Great Plains.

*Ipomoea alba* L.

There is a specimen collected in 1949 in Albuquerque (Castetter 7334 UNM). Although the sheet does not indicate that the specimen was cultivated, this was almost certainly the case. The species typically grows in swamps and other wetlands farther south in the tropics. Indeed, the species is now pantropical in the wet tropics because it has been introduced and cultivated from the New World.

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